Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1. A method of manufacturing a collimator assembly comprising:
placing a first core element within a first center collimator path of a first collimator tube to create a first base-tube couple;
reducing a couple cross-section of said first base-tube couple such that said first base-tube couple becomes a first single-fiber fiber;
assembling said first single-fiber fiber into a collimator group; and
dissolving said first core element such that a first hollow fiber is generated.

[c2] 2. A method of manufacturing a collimator assembly as described in claim 1, wherein said reducing a couple cross-section comprises:
heating said first base-tube couple; and
drawing said first base-tube couple.

[c3] 3. A method of manufacturing a collimator assembly as described in claim 1, wherein:
said first collimator tube comprises a cladding glass tube;

said first core element comprises a glass core; and said first core element comprises a first glass transition temperature, said first collimator tube comprises a second glass transition temperature, said first glass transition temperature and said second glass transition temperature are substantially identical.

[c4] 4. A method of manufacturing a collimator assembly as described in claim 1, wherein said first collimator tube comprises high-Z glass.

[c5] 5. A method of manufacturing a collimator assembly as described in claim 1, wherein said first collimator tube comprises tungsten powder sintered into glass powder.

[c6] 6. A method of manufacturing a collimator assembly as described in claim 1, wherein said first collimator tube comprises material taken from the group of lead oxide, bismuth oxide, tantalum oxide, tungsten oxide, thorium oxide, hafnium oxide, silicon oxide, potassium oxide, boron oxide, aluminum oxide, gallium oxide, germanium oxide, cerium oxide, and antimony oxide.

[c7] 7. A method of manufacturing a collimator assembly as described in claim 1, further comprising:
producing a plurality of additional single-fiber fibers;
arranging said plurality of additional single-fiber fibers

into a first multi-fiber bundle;
reducing said first multi-fiber bundle to generate a multi-fiber fiber; and
assembling said multi-fiber fiber into the collimator assembly.

[c8] 8. A method of manufacturing a collimator assembly as described in claim 7, further comprising:
producing a plurality of additional multi-fiber fibers;
arranging said plurality of additional multi-fiber fibers into a block; and
fusing said additional multi-fiber fibers.

[c9] 9. A method of manufacturing a collimator assembly as described in claim 8, further comprising:
slicing said block to a desired collimator depth.

[c10] 10. A method of manufacturing a collimator assembly as described in claim 1, wherein said dissolving said first core comprises:
placing said the collimator assembly into a water based acid bath.

[c11] 11. A method of manufacturing a collimator assembly as described in claim 1, wherein said first collimator tube comprises an insoluble collimator tube; and said first core element comprises a soluble core element.

[c12] 12. A method of manufacturing a collimator assembly comprising:
producing a plurality of single-fiber fibers, each of said single-fiber fibers produced by:
placing a core element within a center collimator path of a collimator tube to create a base-tube couple; and
reducing a couple cross-section of said base-tube couple such that said base-tube couple becomes a single-fiber fiber;
arranging said plurality of single-fiber fibers into a first multi-fiber bundle; and
dissolving said core elements such that a plurality of hollow fibers is generated.

[c13] 13. A method of manufacturing a collimator assembly as described in claim 12, further comprising:
reducing said first multi-fiber bundle to generate a multi-fiber fiber;
producing a plurality of said multi-fiber fibers;
arranging said plurality of multi-fiber fibers into a block; and
fusing said plurality of multi-fiber fibers.

[c14] 14. A method of manufacturing a collimator assembly as described in claim 12, wherein said reducing a couple cross-section comprises:

heating said base-tube couple; and
drawing said base-tube couple.

[c15] 15. A method of manufacturing a collimator assembly as described in claim 12, wherein:
said collimator tube comprises a cladding glass tube;
said core element comprises a glass core; and
said core element comprises a first glass transition temperature, said collimator tube comprises a second glass transition temperature, said first glass transition temperature and said second glass transition temperature are substantially identical.

[c16] 16. A method of manufacturing a collimator assembly as described in claim 12, wherein said dissolving said core elements comprises:
placing said core elements into a water based acid bath.

[c17] 17. A collimator assembly comprising:
a plurality of hollow collimator fibers, each of said plurality of hollow collimator fibers comprising a drawn glass collimator tube having a center collimator path, said center collimator path maintained during said drawing by way of a core element positioned within said center collimator path, said center collimator path hollowed after said drawing by way of dissolving said core element.

[c18] 18. A collimator assembly as described in claim 17, further comprising:
a plurality of multi-fiber fibers, each of said plurality of multi-fiber fibers comprised of a plurality of said hollow collimator fibers assembled and drawn into said multi-fiber fiber.

[c19] 19. A collimator assembly as described in claim 18, further comprising:
a fused block of said plurality of multi-fiber fibers.

[c20] 20. A collimator assembly as described in claim 17, wherein said drawn glass collimator tube comprises high-Z glass.

[c21] 21. A collimator assembly as described in claim 17, wherein said drawn glass collimator tube comprises tungsten powder sintered into glass powder.

[c22] 22. A collimator assembly as described in claim 17, wherein said drawn glass collimator tube comprises material taken from the group of lead oxide, bismuth oxide, tantalum oxide, tungsten oxide, thorium oxide, hafnium oxide, silicon oxide, potassium oxide, boron oxide, aluminum oxide, gallium oxide, germanium oxide, cerium oxide, and antimony oxide.